

**Q: Please explain Aspect Ratio and Project Resolution.**

**A** Here is some information on what Aspect Ratio to use for shooting and exporting your animation projects in ANM 180.

Either standard 4:3 aspect ratio or 16:9 aspect ratio is fine , but just be consistent in setting your TVPaint project and your export settings to the same aspect ratio and always use the correct frame rate of 24 FPS . You can work at higher resolution in your original TVPaint project if you like , but for uploading the movie file to the class please downscale to 640 x 480 (4:3 aspect) or 640 x 360 (16:9 aspect) so the file sizes are not too large .

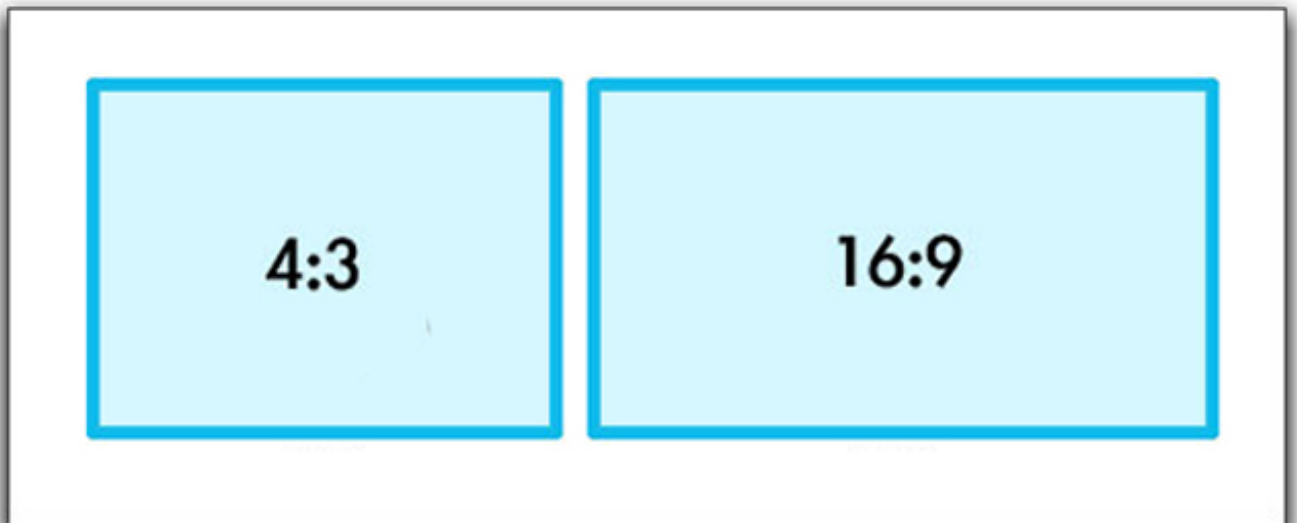
It is important to understand what is meant by ASPECT RATIO , as opposed to RESOLUTION (in pixels).

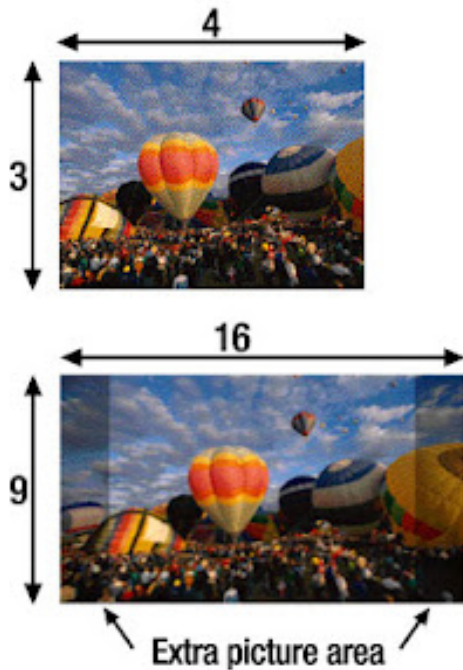
Aspect ratio is the SHAPE of the screen , whereas Resolution is the SIZE of the images in pixels.

So for example , a high-resolution project in 4:3 aspect ratio could be 2048 x 1536 or 1600 x 1200 , or 1280 x 960 and a lower resolution would be 640 x 480 . All of those resolutions are in 4:3 aspect ratio . Or for 16:9 aspect a high resolution would be 1920 x 1080 or 1280 x 720 , with low-res. being 640 x 360 . Ok ?

See this article for an overview of aspect ratios commonly used:

[http://en.wikipedia.org/wiki/Aspect\\_ratio\\_\(image\)](http://en.wikipedia.org/wiki/Aspect_ratio_(image))

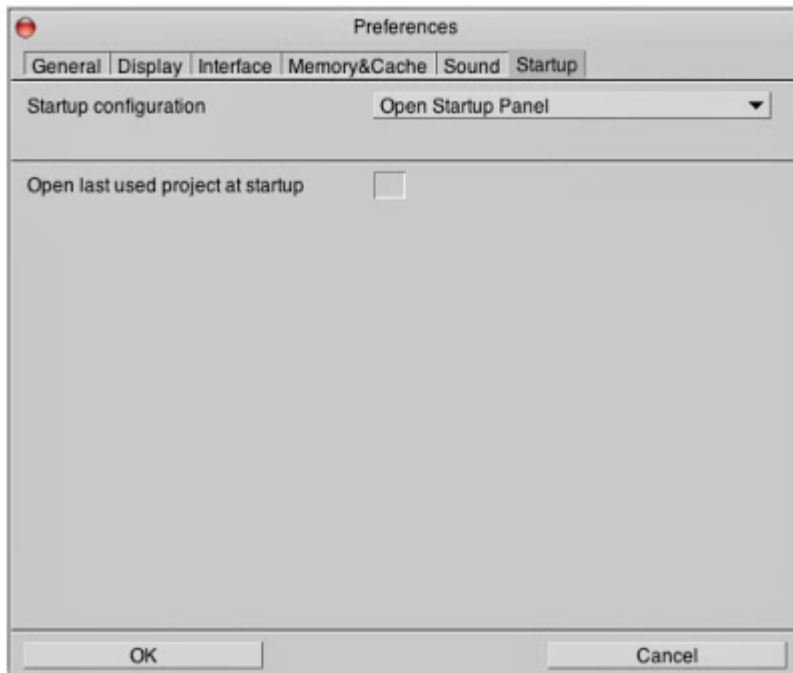




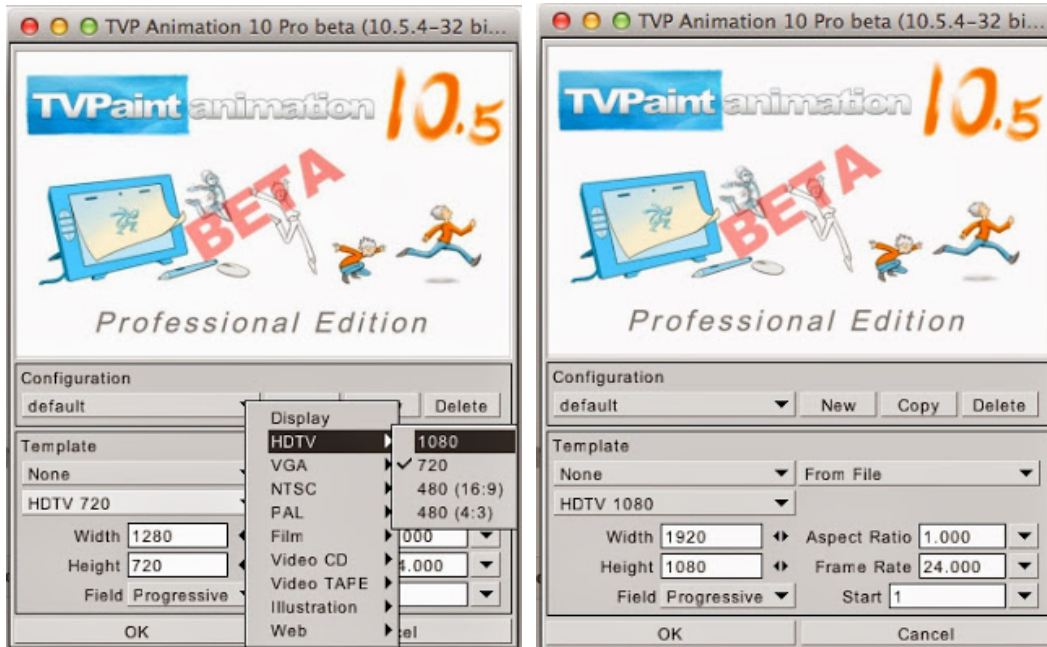
### Five common aspect ratios

<b>4:3</b>	640 x 480 800 x 600 1024 x 768 1600 x 1200 1828 x 1332 2048 x 1556	basically the same as classic aspect ratio of 1.33 for 35mm 1280 x 960
<b>3:2</b>	(still photography aspect ratio for 35 mm film)	
<b>16:9</b>	1280 x 720 1920 x 1080 16:9 is increasingly common aspect ratio for film/television work	
<b>1.85:1</b>	1.85:1 is standard "wide screen" film aspect ratio, very similar to HDTV 16:9 aspect ratio	
<b>2.39:1</b>	True Wide Screen Film aspect ratio	

When you open TVPaint you should get the Start Up Panel (see below) . If you don't see the Start Up Panel you can enable it by going to the Edit menu > Preferences > Start Up tab > Start Up Configuration = OPEN START UP PANEL --



When you set up a new TVPaint project in the Start Up Panel the settings for **16:9 aspect ratio** can be selected from the drop-down menu under HDTV , for either 1920 x 1080 or 1280 x 720. The following screen shots show the Start Up Panel with a new project set for 1920 x 1080 (16:9 aspect) :

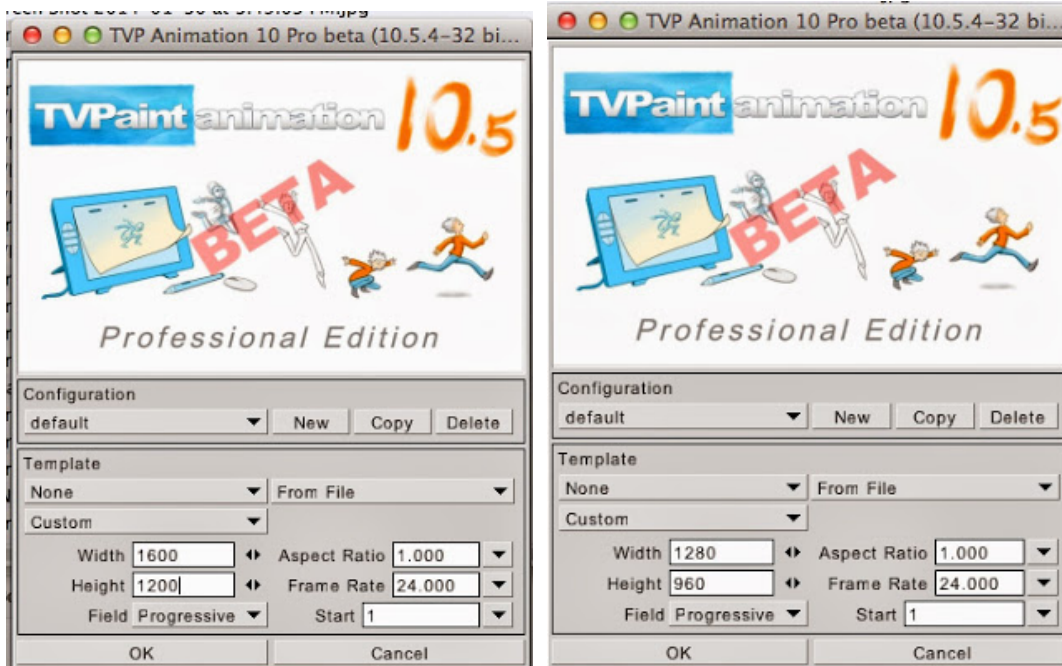


The FIELD = Progressive , (pixel) Aspect Ratio = 1.000 , Frame Rate = 24.000 fps , Start frame = 1 . Then click OK to open the new project .

Or for 16:9 aspect ratio at 1280 x 720 pixels it looks like this:

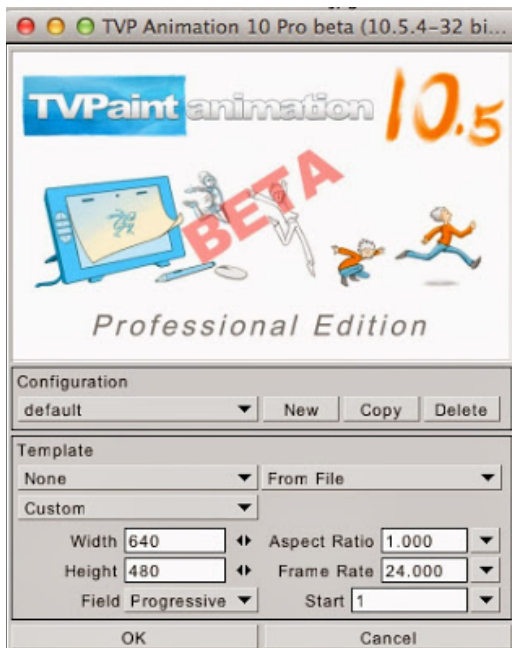


On the other hand you could set up your new project for **4:3 aspect ratio** , at 1600 x 1200 or 1280 x 960 , by manually entering 1600 in the WIDTH box and 1200 in the HEIGHT box (or 1280 in the WIDTH , 960 in the HEIGHT) -



The other settings should be as shown: FIELD = Progressive , (pixel) Aspect Ratio = 1.000 , Frame Rate = 24.000 fps , Start frame = 1 . Then click OK to open the new project .

In fact you don't have to work at higher resolutions , so if your computer is not very fast or you don't have a lot of memory you can set it for 4:3 aspect ratio at 640 x 480 like this, by manually entering 640 in the WIDTH box and 480 in the HEIGHT box , then the other settings as shown -- FIELD = Progressive , (pixel) Aspect Ratio = 1.000 , Frame Rate = 24.000 fps , Start frame = 1 . Then click OK to open the new project .



\*NOTE: If you have a modern fast computer with plenty of memory then it will be no problem to use higher resolutions (such as 1920 x 1080 at 16:9 or 1600 x 1200 at 4:3) , but keep in mind that if you work at high-res and your project has many frames and multiple layers that will tax the CPU and Memory of your computer more , so if you have an older computer without a lot of memory and you notice the TVP project lagging you can just work at a lower resolution. For the projects in this class 640 x 480 is enough .

However, the advantage of working at a higher resolution in the original TVPaint project file is that you'll be able to retain a high-res. archival quality copy of your project on your own computer . BUT if you work at higher resolution then you should downscale to 640 x 480 (4:3 aspect) or 640 x 360 (16:9 aspect) when you export the animation from TVPaint to a .MOV or .AVI file for uploading to the class discussion board.

This is done in the Export panel. When you have finished capturing your frames to the TVPaint timeline and have arranged the frames with the desired timing , you will export it to a .mov or .avi . Go to the File menu > Export To ...

The Export panel will open .

There are slightly different Export settings you should use for Mac and Windows . Below I'll show you the export settings for TVPaint in 32bit mode for Mac and TVPaint in 64bit mode , and export settings for TVPaint on Windows .

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Here are the Export Settings for **TVPaint in 32bit mode on Mac** . The settings should look exactly as shown in the following screens shot.

Format = Quicktime

Mode = RGB

Width/Height of project = 640 x 360 (in right hand column) downscaled from original project size of 1280 x 720

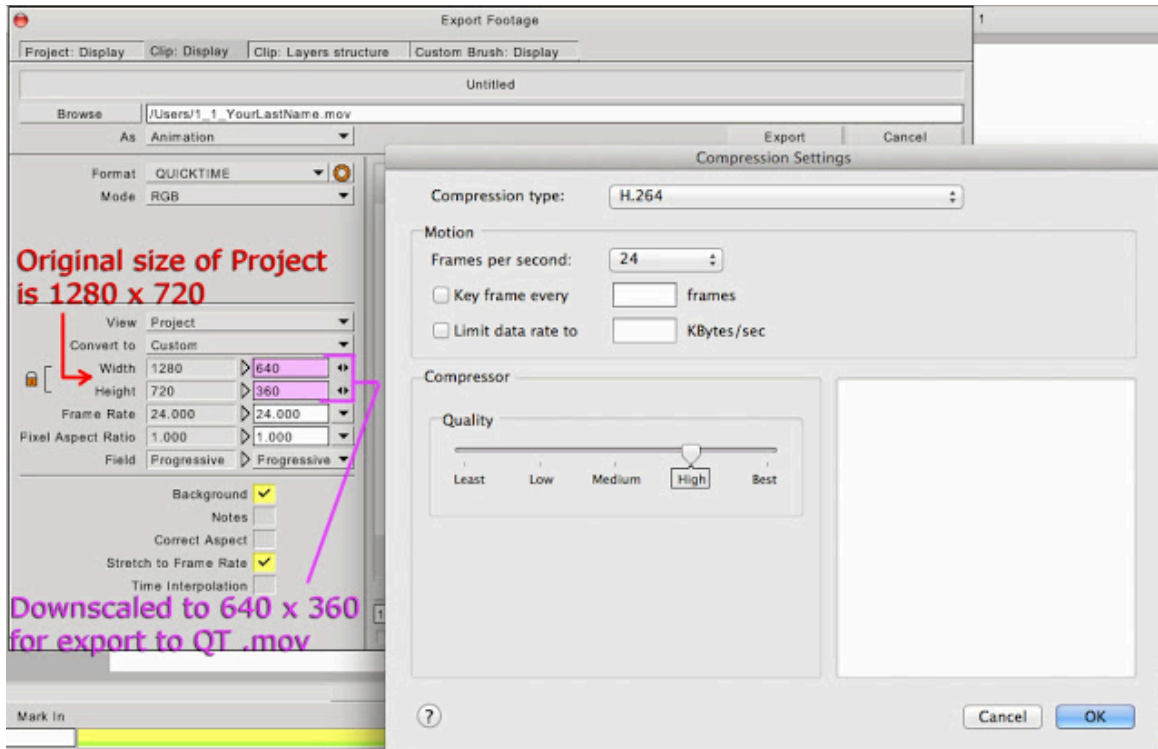
Frame rate = 24.000 fps

Pixel Aspect Ratio = 1.000

Field = Progressive

Name the movie with the standard naming format --- Module number , Assignment Number , Your Last Name -- and Browse to a folder on your directory that you have set up to save you ANM 180 projects . So the file for Module 1 , Assignment 1 would be named like this:

**1\_1\_YourLastName.mov**



In **TVPaint 32bit mode on Mac** you should set the compression by clicking on the little orange "gear" icon next to Quicktime and set it at shown:

Compression = H.264

Frames Per Second = 24

Key frame Every \_\_\_\_ Frames UNCHECKED , leave empty

Limit Data Rate to \_\_\_\_ Kbytes/sec UNCHECKED , leave empty

Compressor Quality = "High" or "Best" . ("Best" will increase the file size somewhat . "High" is good enough for most things)

For TVPaint in 64bit mode on Mac the Quicktime export settings are slightly different because of how Quicktime works on 64bit apps.

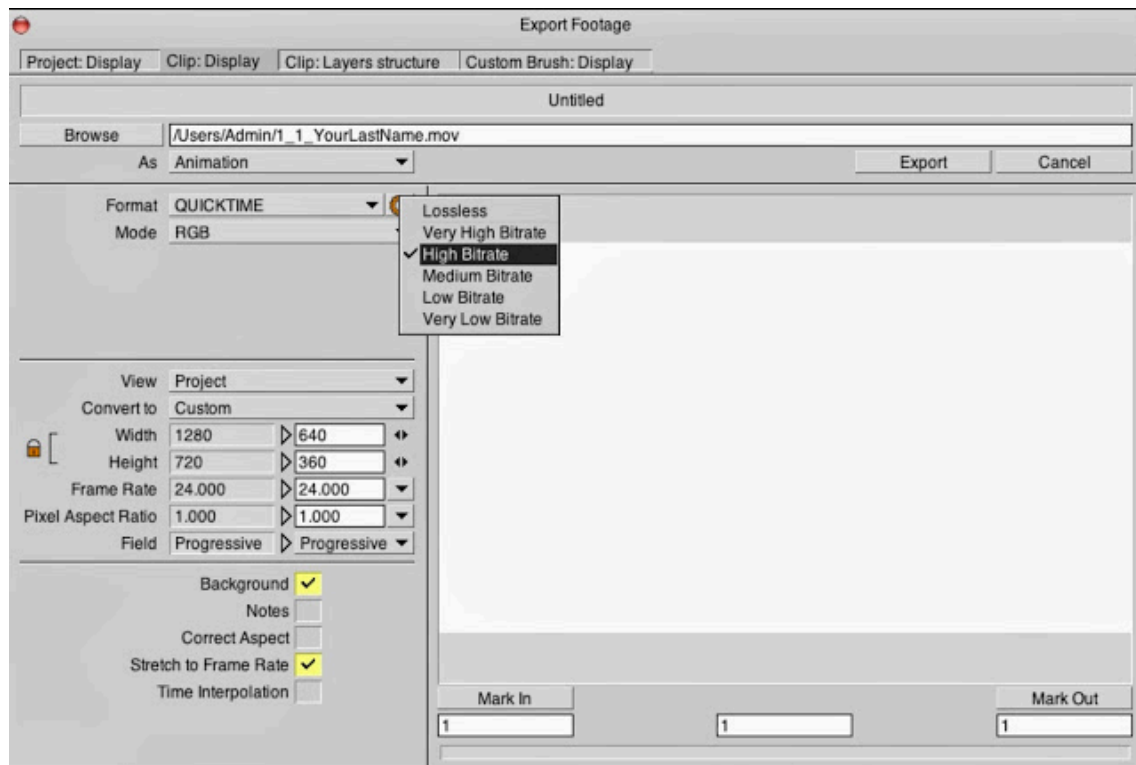


Here are the Export Settings for **TVPaint in 64bit mode on Mac** . The settings should look exactly as shown in the following screens shot.

Format = Quicktime . Mode = RGB . Width/Height of project = 640 x 360 (in right hand column) downscaled from original project size of 1280 x 720 . Frame rate = 24.000 fps . Pixel Aspect Ratio = 1.000 ,Field = Progressive

Name the movie with the standard naming format --- Module number , Assignment Number , Your Last Name -- and Browse to a folder on your directory that you have set up to save you ANM 180 projects . So the file for Module 1 , Assignment 1 would be named like this:

**1\_1\_YourLastName.mov**



For the compression quality settings click the little orange gear icon next to Quicktime and select "High Bitrate" (or "Medium Bitrate") You don't need Lossless or Very High or Low or Very Low.

Below are the Export Settings for **TVPaint on WINDOWS**. The settings should look exactly as shown in the following screens shot.

*\*For Windows use the Internal .AVI export engine because Quicktime is no longer supported by Apple for Windows 64 bit apps.*

Format = AVI (Internal)

Mode = Motion-JPEG (*always use Motion-JPEG , not YUV, RGB, or RGBA* )

Quality = between 50% to 70% works fine for most things. If need be you can increase the quality to 80% , 90% or 100% , but that will make the file size larger.

Width/Height of project = 640 x 360 (in right hand column) downscaled from original project size of 1280 x 720

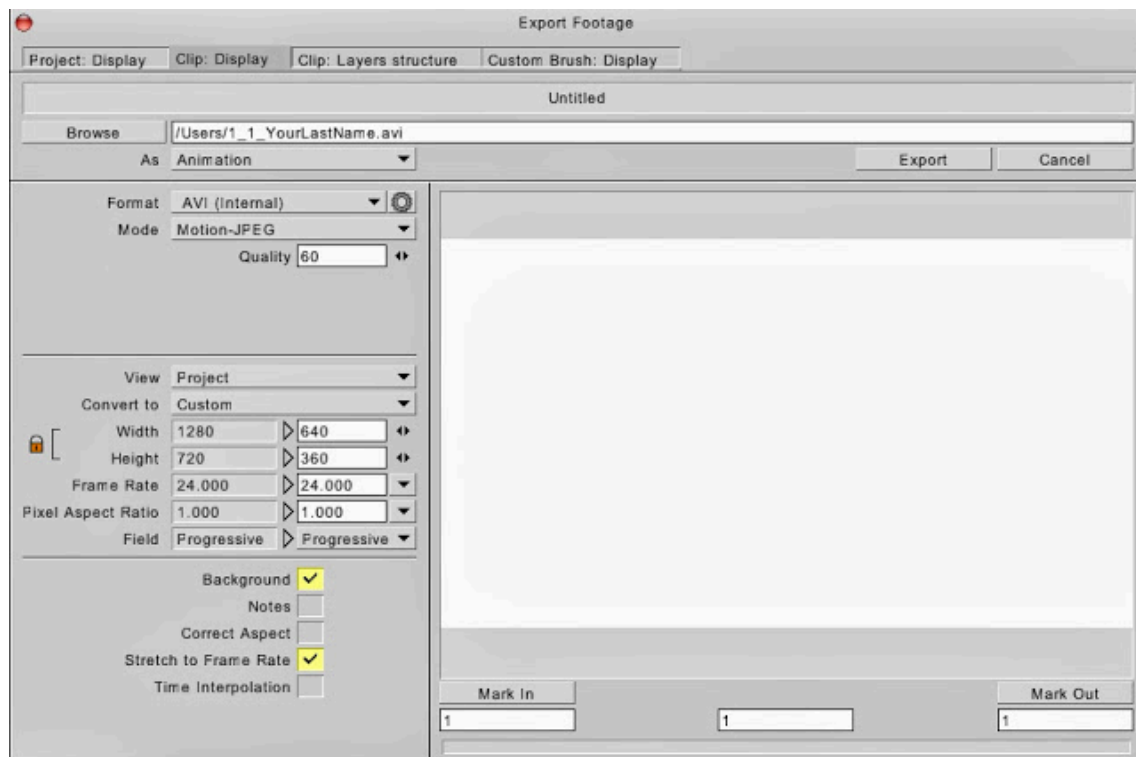
Frame rate = 24.000 fps

Pixel Aspect Ratio = 1.000

Field = Progressive

Name the movie with the standard naming format --- Module number , Assignment Number , Your Last Name -- and Browse to a folder on your directory that you have set up to save you ANM 180 projects . So the file for Module 1 , Assignment 1 would be named like this:

**1\_1\_YourLastName.avi**





(\*NOTE: Mac users may also use the Internal .AVI export engine if they choose . Mac users can use either Quicktime or .AVI , though generally Quicktime is preferred . Windows users must use .AVI. You can however convert a .AVI file to .MOV using Quicktime Pro or AfterEffects or Premiere if you have the proper codecs installed on your computer)

All of the above screen shots show Export settings from an original file 1280 x 720 (16:9 aspect ratio) downscaled to 640 x 360 . If your project size was 1920 x 1080 (16:9 aspect ratio) you would also downscale it to 640 x 360.

You can do the EXACT SAME THING for 4:3 aspect ratio projects , but for 4:3 aspect ratio you are downscaling to 640 x 480 from a higher-res. original project at 1600 x 1200 or 1280 x 960 .

Ok ? I hope that's clear to everyone . Please let me know if you have any further questions about the TVPaint project ASPECT RATIO or project size RESOLUTION (in pixels) and how to export it from TVPaint to a .mov or .avi file.

-David Nethery  
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